

ABSTRACT OF THE DISCLOSURE

A system and procedure for aligning an information carrying laser beam to an optical fiber. The laser diode is first axially aligned to the end of the fiber within specific angular and spatial tolerances. Practical spatial tolerances in an example are one micro meter in a typical Cartesian x, y, and z coordinate system. The angular tolerance is about one micro radian. The system components include a collimating lens that collimates the laser beam, a strong lens that focuses the collimated laser beam onto the fiber end, and a weak lens placed between the collimated lens and the strong lens that performs the final positioning of the focused beam onto the fiber end. This weak lens provides an optical leverage that allows more than an order of magnitude less tolerance in positioning the weak lens compared to the final position of the laser beam onto the fiber end. The collimation and the position of the elements are determined using known instrumentation, known methods and known mechanical assemblies. The assemblies are finally welded in place and mechanically stabilized by baking.

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